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MANAGEMENT STUDY OF GROWING CORN ON NEW YORK DAIRY FARMS, 1980

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Foreward

This publication is part of a research project supported by a grant to the Agricultural Experiment Station at Cornell University by Agway, Inc. of Syracuse, New York.

The crop and animal practices used by dairyfarmers affect their farm incomes. Growing corn is a crop practice that has been changing in recent years. Data available from the farm business management records in the Department of Agricultural Economics at Cornell University were used to study the effects of growing corn on the management practices and incomes of dairy farmers for the year 1980.

This report is an update and elaboration of previous studies done for the years 1973, 1974, and 1978. The statistical work on the 1980 data was done by Patricia Taylor and Karen Shafrik, students in the College of Agriculture and Life Sciences at Cornell University.

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Introduction

Feed is the largest single cost item on dairy farms. On the Cost Account Farms for 1980, all feed including roughage accounted for 45 percent of the cost of producing milk. On the Farm Business Management Farms in 1980, purchased feed accounted for 32 percent of the total cash expenses. It is for these reasons that dairyfarmers are always looking for ways to reduce feed costs.

Dairy feed prices more than doubled from 1970 to 1980. Good managers look for ways to cope with these higher feed prices. Feed costs on dairy farms are affected by numerous things other than prices. The crops grown on the farm and feeding practices are important items to be considered.

The growing of corn on New York dairy farms has changed in recent years. Some dairyfarmers have turned to growing corn for grain as a way of keeping feed costs under control. As a result of these changes, the dairy farm business records have been studied from time to time to find what the management experience of these farmers has been. Studies of the 1973 and 1974 records were reported in A.E. Res. 74-19 and A.E. Res. 76-3 and findings from the 1978 records were published in A.E. Res. 81-14. This publication reports the results of a management study of the growing of corn on the dairy farms in the 1980 farm business summaries.

Study Procedures

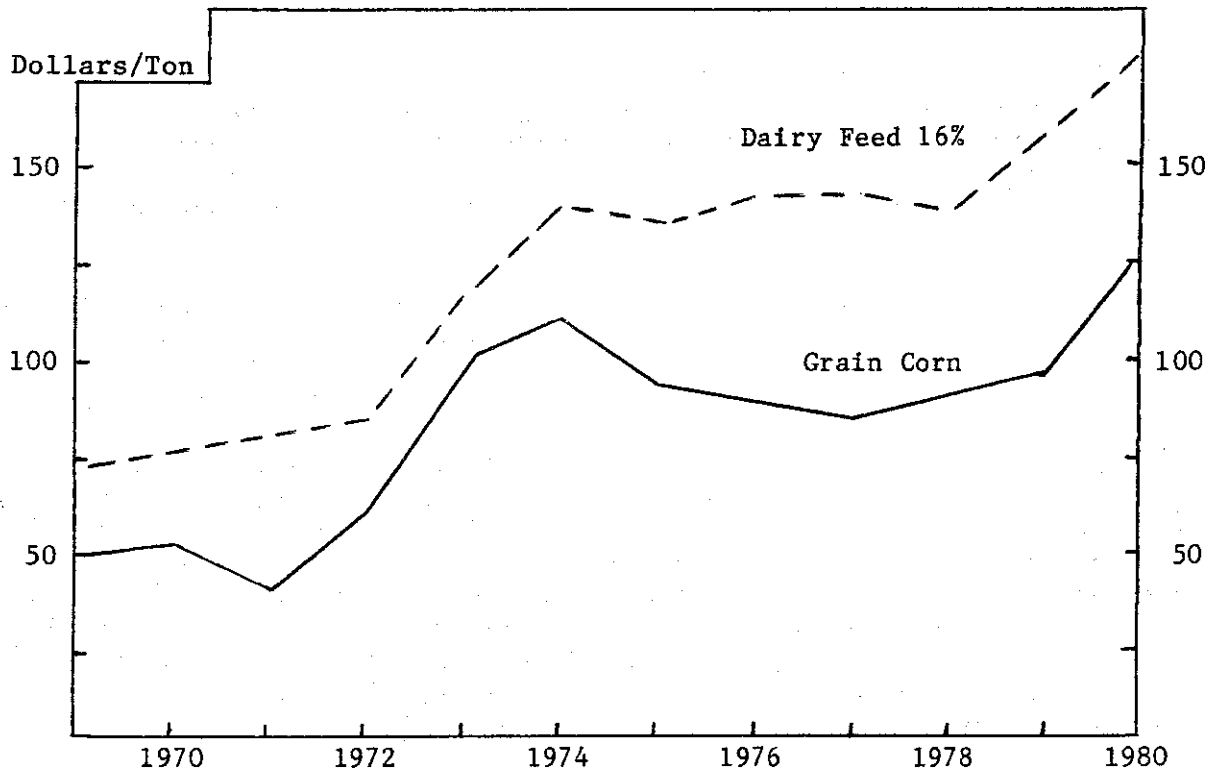
Farmers experiment continuously with the management of their farms. New management practices are considered by the operators and many things are tried. Observing the results of these experiments is a fundamental part of farm management research.

Information of farm businesses can be obtained in various ways. For 75 years, New York farmers have cooperated with Cornell researchers by providing business management information on their operations. Two general sources of such information currently are available in the Department of Agricultural Economics at Cornell University. The first is a group of about 30 Cost Account Cooperators who provide detailed information on all enterprises on their farms. The second is a group of more than 700 Farm Business Management Cooperators who submit physical and financial data on the farm business unit as a whole. These two sources were used for this study.

Cross-tabulation analysis has been used in this study. Statistical tests have not been applied. The simple tabular analysis suggests much about the experiences and indicates certain relationships. All data are on computer tapes so it is relatively easy to make various comparisons. Farms in the 1980 study were sorted on the basis of total acres of corn grown for grain, the acres of grain corn per cow, and the size of herds. The management results were then observed for each of these variables.

Corn and Feed Prices

PRICES OF GRAIN CORN AND DAIRY FEED
New York, Annual Average, 1969-80



In a management study of corn growing on dairy farms, it is helpful to compare the prices of grain corn and dairy feeds. During the 1970's the percent that corn prices were of dairy feed prices ranged from a low of 53 in 1971 to a high of 86 percent in 1973. Both corn and dairy feed prices rose during the 1970's. Dairy feed and grain corn prices were relatively high in 1980, the year of this study.

Table 1. ANNUAL AVERAGE PRICES OF CORN AND 16 PERCENT DAIRY RATION
New York, 1969 to 1980

Year	Average Price Per Ton		Percent Corn is of Dairy Ration
	Corn	Dairy Ration	
1969	\$48	\$72	67%
1970	52	77	68
1971	43	81	53
1972	61	83	73
1973	99	115	86
1974	108	138	78
1975	92	132	70
1976	86	139	62
1977	79	139	57
1978	88	136	65
1979	95	157	61
1980	125	174	70

Source: New York Crop Reporting Service.

Trends in Corn Production and Growing Costs

The acreage of corn for grain in New York increased from 200,000 acres in 1965 to 730,000 acres in 1980 or more than tripled. Corn for grain accounted for 30 percent of the total corn acreage in 1965 and 55 percent in 1980. Corn yields in New York also improved during the period 1965 to 1980.

Table 2. TRENDS IN CORN PRODUCTION
New York, 1965-1980

Year	Acreage			Yield Per Acre	
	Corn			Grain	Silage
	Grain	Silage	Total	Corn	Corn
	- thousand acres -			(bu.)	(tons)
1965	200	475	675	61	12.0
1970	315	507	822	88	14.0
1971	405	549	954	85	14.0
1972	320	610	930	68	10.5
1973	420	620	1040	75	12.5
1974	525	650	1175	78	13.0
1975	545	660	1205	87	13.5
1976	573	655	1228	81	12.0
1977	640	654	1294	87	13.5
1978	600	682	1282	86	13.5
1979	650	625	1275	92	13.5
1980	730	600	1330	93	14.5

Source: 1980 New York Agricultural Statistics.

The cost of production is an important consideration when evaluating a farm enterprise. Data from the Farm Cost Account enterprise records give an indication of the important cost items and the relative costs and returns over the period from 1965 to 1980 (Table 3).

The cost to produce an acre of corn for grain went from \$89 in 1965 to \$259 in 1980. The farmers' estimated value of the corn per bushel in 1980 was 72 cents higher than the cost to produce it, whereas in 1975, the value per bushel was only five cents higher than the cost.

Table 3. COST PER ACRE OF PRODUCING CORN FOR GRAIN
New York Cost Account Farms, 1965, 1970, 1975, and 1980

Cost Item	1965	1970	1975	1980
Machinery	\$22	\$14	\$ 31	\$ 53
Land used	9	14	30	47
Fertilizer	26	21	49	47
Seed, sprays & dusts	8	15	20	33
Labor	10	11	16	25
Other	14	11	39	54
Total Cost per Acre	\$89	\$86	\$185	\$259
Average Yield (bushels)	45	84	83	100
Cost per Bushel	\$1.98	\$1.02	\$2.23	\$2.59
Returns per Bushel	\$1.29	\$1.48	\$2.28	\$3.31

Changes in Use of Resources on Business Summary Farms

Dairy farm businesses have changed markedly the past 25 years. Data from the business summaries indicates the nature of some of these changes.

Table 4. CHANGES IN WORKERS, CATTLE, AND CROP ACRES ON DAIRY FARMS
New York Farm Business Summaries, 1956 to 1980

Year	Number Farms	Average Number of			Total Crop Acres	Crop Acres Rented	
		Workers	Cows	Heifers		Number	% of Total
1956	342	1.8	34	20	98	n/a	n/a
1957	464	1.8	33	20	100	n/a	n/a
1958	559	1.8	33	20	104	n/a	n/a
1959	542	1.8	35	22	104	n/a	n/a
1960	467	1.7	35	21	96	n/a	n/a
1961	490	1.8	38	23	99	n/a	n/a
1962	503	1.8	38	24	101	n/a	n/a
1963	468	1.7	39	24	105	n/a	n/a
1964	434	1.7	40	24	104	n/a	n/a
1965	673	1.8	44	27	124	n/a	n/a
1966	731	1.8	47	30	138	n/a	n/a
1967	548	1.9	51	33	138	n/a	n/a
1968	568	2.1	58	40	155	n/a	n/a
1969	511	2.1	60	40	159	n/a	n/a
1970	509	2.2	65	43	168	n/a	n/a
1971	569	2.2	67	44	186	n/a	n/a
1972	571	2.3	70	45	188	n/a	n/a
1973	609	2.2	69	46	198	44	22
1974	628	2.4	72	50	213	56	26
1975	605	2.4	72	54	217	61	28
1976	615	2.5	71	52	209	56	27
1977	570	2.5	71	51	219	56	26
1978	527	2.4	71	49	217	58	27
1979	610	2.7	75	53	228	58	25
1980	600	2.7	75	56	246	76	31
Average:							
1956-1960	475	1.8	34	21	100	n/a	n/a
1976-1980	584	2.6	73	52	224	61	27
% Increase	23%	44%	115%	148%	124%	--	--

Source: Annual Dairy Farm Business Summaries.

Number of cows per farm for 1956-60 averaged 34 compared with 73 for 1976-80, an increase of 115 percent. Heifer numbers increased 148 percent during this period indicating that more expansion is likely. Total crop acres increased by 124 percent from 1956-60 to 1976-80. This is faster than the number of cows and suggests changes in cropping practices. Number of workers increased by only 44 percent. Rented land has been increasing and for 1980 accounted for 31 percent of the total cropland on these farms.

Table 5. CHANGES IN ACRES OF CROPS GROWN ON DAIRY FARMS
New York Dairy Farm Business Summaries, 1956 to 1980

Year	Average Acres Grown of				% Total Crop Acres in		Ratio of Hay to Corn Silage
	Hay Crops	Oats	Corn Silage	Grain Corn	Corn Silage	Grain Corn	
1956	57	10	11	3	11%	3%	5.2 to 1
1957	63	12	12	4	12	4	5.3 to 1
1958	674	11	12	4	12	4	5.3 to 1
1959	66	11	12	5	12	5	5.6 to 1
1960	69	9	11	2	11	2	6.3 to 1
1961	70	10	11	3	11	3	6.4 to 1
1962	72	9	12	2	12	2	6.0 to 1
1963	70	8	14	2	13	2	5.0 to 1
1964	74	8	15	2	14	2	4.9 to 1
1965	81	12	20	3	16	2	4.1 to 1
1966	87	12	25	6	18	4	3.5 to 1
1967	76	10	25	8	18	6	3.0 to 1
1968	88	12	37	8	24	5	2.4 to 1
1969	85	9	41	10	26	6	2.1 to 1
1970	92	7	45	14	27	8	2.0 to 1
1971	100	7	51	17	27	9	2.0 to 1
1972	106	6	57	12	30	6	1.9 to 1
1973	120	8	53	17	27	9	1.3 to 1
1974	117	7	59	23	28	11	2.0 to 1
1975	120	7	59	24	27	11	2.0 to 1
1976	123	6	59	21	28	10	2.1 to 1
1977	128	6	55	26	25	12	2.3 to 1
1978	129	6	60	19	28	9	2.1 to 1
1979	129	6	59	28	26	12	2.2 to 1
1980	131	8	55	32	22	13	2.4 to 1
Average:							
1956-1960	64	11	12	3	12	4	5.3 to 1
1976-1980	128	6	55	25	26	11	2.2 to 1
% Increase	100%	-45%	383%	733%	--	--	-- --

Source: Annual Dairy Farm Management Business Summaries.

Both acres of hay and corn have increased on the farms in the dairy business summaries over the past 25 years. Acres of hay doubled, acres of corn silage more than quadrupled, acres of grain corn increased eightfold, while acres of oats decreased nearly half (Table 5).

Corn growing has been the major area of change in crops grown on these farms. In the late 1950's, about 12 percent of the cropland was used for corn silage but by the late 1970's this had increased to 26 percent. Grain corn used only four percent of the cropland in the early period but 11 percent in the recent period. The ratio of acres of hay to acres of corn silage was 5.3 to one in the earlier period but 2.2 to one in the later period.

Table 6. CHANGES IN CROP ACRES PER COW ON DAIRY FARMS
New York Farm Business Summaries, 1956 to 1980

Year	Average Acres Per Cow of				Ratio of Hay to Corn Silage
	Hay Crops	Corn Silage	Grain Corn	Total Crops	
1956	1.7	.3	.09	2.9	5.6 to 1
1957	1.9	.4	.12	3.0	4.8 to 1
1958	1.9	.4	.12	3.0	5.0 to 1
1959	1.9	.3	.14	3.0	5.6 to 1
1960	2.0	.3	.06	2.7	6.5 to 1
1961	1.8	.3	.08	2.6	6.2 to 1
1962	1.9	.3	.05	2.7	5.9 to 1
1963	1.8	.4	.05	2.7	5.0 to 1
1964	1.9	.4	.05	2.6	5.0 to 1
1965	1.8	.5	.07	2.8	3.6 to 1
1966	1.9	.5	.13	2.9	3.6 to 1
1967	1.5	.5	.16	2.7	3.0 to 1
1968	1.5	.6	.14	2.7	2.3 to 1
1969	1.4	.7	.17	2.7	2.1 to 1
1970	1.4	.7	.15	2.6	2.0 to 1
1971	1.5	.8	.35	2.8	2.0 to 1
1972	1.5	.8	.17	2.7	1.9 to 1
1973	1.7	.8	.25	2.9	2.3 to 1
1974	1.6	.8	.32	3.0	2.0 to 1
1975	1.7	.8	.33	3.0	2.1 to 1
1976	1.7	.8	.30	2.9	2.2 to 1
1977	1.8	.8	.40	3.1	2.3 to 1
1978	1.8	.9	.27	3.0	2.1 to 1
1979	1.7	.8	.37	3.0	2.2 to 1
1980	1.7	.7	.43	3.3	2.3 to 1
Average:					
1956-1960	1.9	.3	.06	2.9	5.5 to 1
1976-1980	1.7	.8	.40	3.0	2.2 to 1
% Increase	-15%	158%	567%	11%	--

Source: Annual Dairy Farm Management Business Summaries.

Size of dairy farms has increased both in number of cows and acres of cropland. The use of cropland for various crops also has changed. One measure of this is the acres grown per cow.

Total acres of crops per cow has changed little over the past 25 years. The acres of hay per cow declined from 1.9 to 1.7 over this time while the acres of corn silage increased from 0.3 to 0.8 acres per cow. Acres of grain corn per cow increased from .06 to .40 from 1956-60 to 1976-80. The ratio of hay acreage per cow to corn silage dropped from 5.5 to one in the late 1950's to 2.2 to one in the late 1970's.

Table 7. CHANGES IN RATES OF PRODUCTION AND LABOR OUTPUT ON DAIRY FARMS
New York Farm Business Summaries, 1956 to 1980

Year	Average Yield Per Acre				Lbs. Milk Sold		Cows Per Worker
	Hay Crops	Corn Silage	Grain Corn	Oats	Per Cow	Per Worker	
	(tons)	(tons)	(bu.)	(bu.)			
1956	2.1	10	n/a	52	8,900	168,100	19
1957	2.1	11	n/a	58	8,900	162,900	18
1958	2.3	10	67	51	9,400	172,700	18
1959	2.0	11	n/a	60	9,400	181,900	19
1960	2.3	10	n/a	54	9,500	196,400	21
1961	2.6	12	n/a	50	10,000	210,400	21
1962	1.8	12	n/a	50	10,400	219,400	21
1963	2.3	12	60	57	11,000	251,200	24
1964	2.0	12	76	51	11,300	264,900	24
1965	2.1	13	64	63	11,900	291,100	24
1966	2.5	14	69	51	11,900	311,700	26
1967	2.6	17	80	50	12,100	324,500	27
1968	2.8	14	71	61	12,300	340,600	28
1969	2.8	16	76	57	12,700	362,700	29
1970	2.7	15	72	68	12,600	373,700	30
1971	2.7	16	80	60	12,900	391,700	30
1972	2.4	11	52	40	12,700	385,900	30
1973	2.6	13	68	55	12,400	392,600	31
1974	2.6	14	73	61	12,600	374,300	30
1975	2.6	14	94	56	13,000	387,900	30
1976	2.8	13	83	52	13,400	380,200	28
1977	2.3	14	89	50	13,600	385,900	28
1978	2.4	14	93	63	14,000	404,800	30
1979	2.7	14	92	62	14,300	400,700	28
1980	2.5	15	92	58	14,300	403,000	28
Average:							
1956-1960	2.2	10	n/a	55	9,200	176,400	19
1976-1980	2.5	14	90	57	13,900	294,900	28
% Increase	14%	36%	--	4%	46%	101%	47%

Source: Annual Dairy Farm Management Business Summaries.

Changes in crop yields on these New York dairy farms have been relatively less than changes in acreage. Corn silage yields increased 36 percent from 1956-60 to 1976-80. Hay yields for the same period increased 14 percent and oat yields by only four percent.

In contrast to the modest increases in crop yields, milk sold per cow increased 46 percent and milk sold per worker by 101 percent and cows per worker by 47 percent.

This may be a reflection that dairyfarmers have concentrated more on the care and improvement of the cows than they have on the crops.

Corn Grown on Farms of 1980 Business Management Cooperators

There were 600 New York Dairy farm business management cooperators in the 1980 summary.* These were specialized dairy operations since all with cash crops or other kinds of enterprises were excluded from this summary. The cooperators participate on a voluntary basis so they are not representative of all farms in the state.

A study of the experience of these 600 farms gives some leads in relation to the feasibility of growing corn as a way of controlling feed costs and making a good return from the business. The data were examined from this point of view. The farms were grouped on the basis of the acres of corn grown for grain, acres of grain corn per cow, and size of herd, then various management features of the businesses were observed.

Farms Growing Corn for Grain

Of the 600 farms in the study, 287 or 48 percent grew no corn for grain (Table 8). However, these 287 farms did grow an average of 47 acres of corn for silage. Only 35 farms out of the 600 grew no corn at all. A total of 313 or 52 percent of the farms grew some corn for grain in 1980.

Table 8. DISTRIBUTION OF DAIRY FARMS BY ACRES OF CORN FOR GRAIN
600 New York Dairy Farms, 1980

Acres Corn for Grain	Farms		Acres of Corn Grown		
	Number	Percent	Silage	Grain	Total
None	287	48%	47	0	47
1 to 9	27	4	39	6	45
10 to 24	63	11	40	17	57
25 to 49	71	12	50	34	84
50 to 74	63	10	60	61	121
75 to 99	28	5	66	85	151
100 to 149	36	6	82	112	194
150 to 199	12	2	112	163	275
200 or more	13	2	145	262	407
All Farms	600	100%	55	32	87

The 313 farms were divided into eight groups on the basis of the acres of corn harvested for grain. There were 27 farms or four percent of all farms that had less than 10 acres of corn for grain. Some of these probably were simply harvesting for grain the corn not needed for silage. There were 61 farms or 10 percent with 100 or more acres of corn for grain.

The percent of farms growing corn for grain in 1978 was only 38 percent compared with 52 percent in 1980. In 1978 only 15 percent of the farms grew 50 acres or more of corn for grain while in 1980 this was 25 percent. The average acres of both silage and grain corn for all farms in 1978 was 79 compared with 87 in 1980. This is an increase of 10 percent in total corn acreage from the 1978 study to the 1980 study.

*A.E. Res. 81-10, Dairy Farm Management Business Summary, New York, 1980.

The groups growing less than 50 acres of corn for grain all grew more acres of corn for silage than corn for grain. For the 600 farms, there was an average of 55 acres of corn for silage and 32 acres of corn for grain, or a little over one-third of all corn acreage was for grain. The farms with the larger acreages of corn for grain also had larger acreages for silage (Table 8).

Acres Corn For Grain and Income

Various measures of income are used in studying farm businesses. For this analysis, net cash farm income and labor and management income were used.

The more acres of corn for grain the larger the net cash farm income per farm (Table 9). The farms with no corn for grain averaged \$27,729 net cash farm income while the farms with 200 or more acres of corn for grain averaged \$95,631 or more than three times as much.

Table 9. INCOME FROM DAIRY FARMS GROUPED BY ACRES CORN FOR GRAIN
600 New York Dairy Farms, 1980

Acres Corn for Grain	Net Cash Farm Income	Labor and Management Income			
		Per Operator	Per Cow	Per Crop Acre	Per \$1,000 Capital
None	\$27,729	\$ -712	\$-14	\$ -5	\$-2.54
1 to 9	26,815	775	18	6	3.16
10 to 24	30,109	-238	-5	-1	-.83
25 to 49	35,902	4,931	90	27	15.28
50 to 74	43,544	1,691	26	7	4.35
75 to 99	43,594	-1,866	-22	-6	-3.87
100 to 149	61,611	4,572	53	15	9.22
150 to 199	84,113	16,310	156	49	27.12
200 or more	95,631	10,838	86	24	14.27
All Farms	\$35,940	\$1,565	\$26	\$8	\$ 4.58

The average labor and management income measures were somewhat variable when grouped by acres of corn for grain. In general, the farms with corn for grain had better labor and management incomes than those with no corn for grain. The farms with 100 or more acres of grain corn had the largest labor incomes (Table 9).

In general, it appears that New York dairy farmers who grew corn for grain in 1980 had better incomes than those who grew no corn for grain.

Relation of Acres Corn For Grain to Business Factors

One way to study farm management practices is to observe the experiences of farmers whose practices vary. In this study farms have been grouped according to the acres of corn grown for grain, then the practices and results have been observed. This suggests how the growing of corn for grain fits into the dairy operation and how it effects the farm business income.

Crops Grown

The 600 dairyfarmers in this study rented an average of 76 acres or 31 percent of the total crop acres operated. The farms growing corn for grain rented larger acreages and a larger proportion of the total crop acres than did those growing no corn for grain or small acreages (Table 10).

For all farms in the study, 35 percent of the crop acres were used for all corn with 13 percent used for grain corn. The farms with more corn for grain had a larger proportion of their cropland in corn and also a larger percentage in corn for grain. The farms growing 150 acres or more of grain corn had more than 50 percent of their cropland in corn with about one-third of all crop acres in corn for grain (Table 10). In general, it might be concluded that the farms growing larger acreages of corn for grain did it in part by renting more land and by using a larger proportion of the available cropland for corn and especially corn for grain.

Table 10. CROP ACRES ON DAIRY FARMS BY ACRES CORN FOR GRAIN
600 New York Dairy Farms, 1980

Acres Corn for Grain	Crop Acres				Percent of Crop Acres Used	
	Total	Owned	Rented	% Rented	All Corn	Grain Corn
None	184	134	50	27%	26%	0%
1 to 9	155	110	45	29	29	4
10 to 24	212	135	77	36	27	8
25 to 49	244	173	71	29	34	14
50 to 74	300	198	101	34	40	20
75 to 99	364	207	157	43	41	23
100 to 149	438	309	129	29	44	26
150 to 199	504	374	130	26	55	32
200 or more	690	450	240	35	59	38
All Farms	246	170	76	31%	35%	13%

Total crop acres for all farms in the 1980 summary averaged 246 compared with 217 for all farms in the 1978 summary. The average acres rented for the two years was 76 and 58 which was 31 and 27 percent rented respectively. The percent of the total crop acreage used for all corn was 36 percent in 1978 and 35 percent in 1980 but the percent used for grain corn was nine and 13 respectively.

Table 11. CROPS GROWN ON DAIRY FARMS BY ACRES CORN FOR GRAIN
600 New York Dairy Farms, 1980

Acres Corn for Grain	Acres Hay Cut for Haylage	Acres Used For			
		Hay Crops	Corn	Oats	Other
None	34	116	47	4	18
1 to 9	27	91	45	7	12
10 to 24	31	119	57	7	29
25 to 49	56	125	84	12	23
50 to 74	61	143	121	14	22
75 to 99	108	185	151	10	18
100 to 149	110	201	194	13	30
150 to 199	123	172	275	24	33
200 or more	157	217	407	11	55
All Farms	51	131	87	8	20

Hay and corn were the major crops on the 600 dairy farms. The hay crops averaged 131 acres per farm and corn 87 acres. Oats and all other crops accounted for an average of only 28 acres per farm in 1980 (Table 11).

Size of Business

In general, it was the larger farm businesses that grew more corn for grain. This was true for all the common measures of size used in the dairy farm business summary. The first and most logical measure would be crop acres. The average crop acres for the 48 percent of the farms with no corn for grain was 184 acres, while the groups of farms with 10 or more acres of corn for grain averaged from 212 to 690 acres of crops (Table 10).

Table 12. SIZE OF BUSINESS ON DAIRY FARMS GROUPED BY
ACRES CORN FOR GRAIN
600 New York Dairy Farms, 1980

Acres Corn for Grain	Worker Equivalent	Number Cows	Number Heifers	Cash Receipts	Capital (End Inventory)
None	2.3	61	43	\$121,347	\$ 332,797
1 to 9	2.0	51	36	103,416	286,744
10 to 24	2.4	60	48	128,270	364,831
25 to 49	2.6	72	56	151,887	425,851
50 to 74	2.8	82	62	179,256	489,399
75 to 99	3.3	99	77	208,494	573,880
100 to 149	4.0	127	100	281,482	733,572
150 to 199	4.3	158	125	333,162	908,114
200 or more	5.8	195	158	438,715	1,169,298
All Farms	2.7	75	56	\$155,748	\$ 426,470

For most measures of size, the farms with one to nine acres of corn for grain were smaller than the no corn for grain farms. This probably indicates that these were smaller operations with some corn not needed for silage so it was harvested for grain. With the groups that grew 10 or more acres of corn for grain, the larger the acres of corn for grain the larger

the business, for example, the average worker equivalent ranged from 2.4 to 5.8 (Table 12). The three groups of farms with 100 or more acres of corn for grain averaged 127, 158, and 195 cows and 100, 125, and 158 heifers. This compares with an average of 75 cows and 56 heifers for all 600 farms.

Rates of Production

Production levels are always an important factor in a dairy farm business analysis. These were examined in this study and are shown in Table 13. Pounds of milk sold per cow is a key indicator of rates of production on a dairy farm. In general, the farms with corn for grain sold more milk per cow than the farms with no grain corn. Farms with no corn for grain averaged 13,900 pounds per cow while those with 200 or more acres averaged 15,200. This relationship was affected by many practices of which corn for grain would be one.

An examination of the average crop yields for the nine groups of farms shows that the yields generally were higher on the farms growing more corn for grain. For example, the farms with 150 to 199 acres of corn for grain had average yields of hay crops per acre of 3.6 tons of dry hay equivalent compared with only 2.2 tons for those with no corn for grain. The more acres of corn for grain, generally the higher the average corn silage yield per acre (Table 13).

Table 13. RATES OF PRODUCTION ON DAIRY FARMS GROUPED BY
ACRES CORN FOR GRAIN
600 New York Dairy Farms, 1980

Acres Corn for Grain	Lbs. Milk Sold/Cow	Tons H.E. Per Acre Hay Crops	Tons Corn Silage/Acre	Bu. Corn Per Acre	Bu. Oats Per Acre
None	13,900	2.2	14.1	----	46.2
1 to 9	14,000	2.4	13.2	76.7	53.1
10 to 24	14,600	2.3	14.4	87.1	47.5
25 to 49	14,600	2.5	14.6	88.9	63.8
50 to 74	15,000	2.6	14.5	92.2	62.4
75 to 99	14,200	2.5	14.2	86.8	55.2
100 to 149	14,900	3.0	16.5	93.8	71.8
150 to 199	14,600	3.6	16.4	97.0	69.3
200 or more	15,200	2.9	15.1	91.0	64.5
All Farms	14,300	2.5	14.5	92.1	58.3

The conclusion might be drawn from this that the farms growing corn for grain had better land resources and in turn better crop yields. In brief, the corn for grain was grown on farms with relatively good cropland.

Labor Efficiency

Efficient use of labor is an important factor in achieving a profitable farm business. The farms growing corn for grain in general had more acres of crops per worker and more cows per worker than those with no corn for grain (Table 14), and with their higher producing cows, the farms with more corn for grain sold more milk per worker.

Work units are used as a measure on diversified farms. A work unit is the amount of work accomplished per day under average conditions. This measure combines the crop and livestock work so merits consideration here. Again, in general, the labor efficiency as measured by work units per worker was greater on the farms with more acres of corn grown for grain (Table 14).

Table 14. LABOR EFFICIENCY ON DAIRY FARMS GROUPED
BY ACRES CORN FOR GRAIN
600 New York Dairy Farms, 1980

Acres Corn for Grain	Crop Acres Per Worker	Cows Per Worker	Lbs. Milk Sold Per Worker	Work Units Per Worker
None	80	27	365,100	283
1 to 9	78	26	358,350	277
10 to 24	88	25	363,200	277
25 to 49	94	28	409,600	309
50 to 74	107	30	447,300	338
75 to 99	110	30	422,600	338
100 to 149	110	32	474,100	359
150 to 199	117	37	545,100	412
200 or more	119	34	510,300	387
All Farms	91	28	403,000	309

Capital Efficiency

The amount of capital per worker tended to increase as the acres of corn for grain increased (Table 15). For the per cow and per crop acre owned measures of capital efficiency, the least investment per unit was for the farms with no corn for grain while there seemed to be little consistent difference among the groups growing various amounts of corn for grain. The total machinery investment was higher for farms growing 10 or more acres of corn for grain. However, the machinery investment per cow showed no consistent difference for the groups studied (Table 18).

The capital turnover or years for receipts to equal capital investment was slightly higher for the larger growers of corn compared to small grain corn growers.

Table 15. CAPITAL EFFICIENCY ON DAIRY FARMS GROUPED BY
ACRES CORN FOR GRAIN
600 New York Dairy Farms, 1980

Acres Corn for Grain	Total Farm Inventory		Land and Buildings		Capital Turnover
	Per Worker	Per Cow	Per Cow	Per Crop Acre Owned	
None	\$144,831	\$5,282	\$2,496	\$1,174	2.3
1 to 9	143,372	5,410	2,458	1,185	2.4
10 to 24	150,757	5,884	2,741	1,259	2.4
25 to 49	165,059	5,678	2,747	1,191	2.3
50 to 74	177,963	5,758	2,675	1,148	2.2
75 to 99	172,336	5,518	2,544	1,278	2.3
100 to 149	183,393	5,516	2,566	1,104	2.2
150 to 199	213,674	5,571	2,447	1,066	2.1
200 or more	200,566	5,846	2,845	1,265	2.1
All Farms	\$157,952	\$5,886	\$2,671	\$1,178	2.2

Cost Control

The corn grown for grain on these 600 dairy farms was used for feed. In the study, all farms with crop sales that were 10 percent or more of the milk sales were excluded from the 600 and were included in a special group called "dairy-cash crop farms". Consequently, in this study, it is logical to expect that growing corn for grain would have an effect on the feed costs, and it did.

The average feed bought per cow for farms with no corn for grain was \$564 while on farms with 200 or more acres of corn for grain it was \$383. The more corn for grain the lower the cost of feed bought per cow (Table 16). On the other hand, the crop expense per cow increased as the acres of corn for grain increased. However, the combined feed bought and crop expense per hundredweight of milk sold tended to decrease as the acres of corn increased (\$4.82 for no corn to \$3.96 with 200 or more acres).

Table 16. FEED COSTS ON DAIRY FARMS GROUPED BY ACRES CORN FOR GRAIN
600 New York Dairy Farms, 1980

Acres Corn for Grain	Feed Bought Per Cow	Crop Expense Per Cow	% Feed Bought is of Milk	Per Cwt. Milk Expense	
				Feed Bought	Feed & Crops
None	\$564	\$109	32%	\$4.04	\$4.82
1 to 9	513	116	28	3.65	4.48
10 to 24	542	143	29	3.70	4.68
25 to 49	486	147	26	3.31	4.31
50 to 74	460	191	24	3.06	4.33
75 to 99	443	171	24	3.11	4.32
100 to 149	417	186	22	2.79	4.04
150 to 199	418	203	23	2.85	4.23
200 or more	383	222	20	2.51	3.96
All Farms	\$497	\$147	27%	\$3.47	\$4.49

Percent feed bought is of milk receipts is a common measure used in the feed cost analysis on a dairy farm. The farms with no corn for grain spent 32 percent of the milk receipts for purchased feed while the farms with 200 or more acres of corn for grain only spent 20 percent. It would appear that the growing of corn for grain on these dairy farms did have an effect on the feed costs.

Practices that affect feed costs on dairy farms are reported in Table 17. The farms growing corn for grain had a higher percentage of heifers to cows, more crop acres per cow, more tons of hay equivalent per crop acre, and also higher lime and fertilizer expense per crop acre. The two groups with largest grain corn acreages averaged 1.0 and 1.3 acres of corn for grain per cow.

The farms with 100 to 149 acres of corn for grain produced 8.8 tons hay equivalent of roughages per cow on 2.3 acres compared with 8.1 tons on 2.7 acres for the "no corn for grain" farms (Table 17). This supports the generally accepted idea that corn will produce more feed per acre than hay. The average yields for the 600 farms as reported in Table 13 showed 4.8 tons hay equivalent per acre of corn silage ($14.5 \div 3 = 4.8$) compared with 2.5 tons per acre of hay.

Table 17.

FEED FACTORS ON DAIRY FARMS GROUPED
BY ACRES CORN FOR GRAIN
600 New York Dairy Farms, 1980

Acres Corn for Grain	Heifers as % of Cows	Crop Acres Per Cow			Tons H.E.		Fertilizer & Lime Per Crop Acre
		Grain Corn	Forages	Total	Per Acre Forages	Per Cow	
None	70%	0.0	2.7	2.7	3.0	8.1	\$24
1 to 9	71	0.1	2.6	2.7	3.0	7.8	24
10 to 24	80	0.3	2.8	3.1	3.0	8.4	25
25 to 49	78	0.5	2.5	3.0	3.2	7.8	27
50 to 74	76	0.7	2.5	3.2	3.4	8.5	33
75 to 99	78	0.9	2.5	3.4	3.1	7.8	31
100 to 149	79	0.9	2.3	3.2	3.8	8.8	35
150 to 199	79	1.0	1.8	2.8	4.4	7.9	44
200 or more	81	1.3	1.9	3.2	4.1	7.8	39
All Farms	75%	0.4	2.5	2.9	3.2	8.1	\$29

Growing corn for grain generally means more machinery, at least for the harvest operations. For this reason, the machinery costs were examined in this analysis. As would be expected, the total machinery inventory was greater on the farms growing more corn for grain. Part of this would be due to the corn for grain harvest equipment but part would also be due to generally larger operations.

Machine hire expense per farm in general was greater on the farms growing more corn for grain. This suggests that some were hiring certain grain corn operations done. Machinery costs per cow and per hundredweight of milk and the total labor and machinery cost per cow all were greater on the farms with corn for grain than on those with none (Table 18).

Table 18.

MACHINERY COSTS ON DAIRY FARMS GROUPED
BY ACRES CORN FOR GRAIN
600 New York Dairy Farms, 1980

Acres Corn for Grain	Machinery Inventory		Machine Hire	Machinery Cost		Labor & Machinery Cost/Cow
	Amount	Per Cow		Per Cow	Per Cwt. Milk	
None	\$ 60,960	\$ 968	\$ 653	\$385	\$2.76	\$708
1 to 9	60,809	1,147	801	431	3.07	747
10 to 24	70,947	1,144	936	449	3.07	789
25 to 49	76,821	1,024	1,611	431	2.94	766
50 to 74	93,839	1,104	1,429	481	3.20	797
75 to 99	106,215	1,021	1,152	443	3.11	767
100 to 149	126,871	954	3,302	463	3.10	810
150 to 199	160,162	983	1,664	437	2.98	742
200 or more	187,860	939	4,081	484	3.17	851
All Farms	\$ 78,131	\$1,042	\$1,161	\$425	\$2.96	\$751

The machinery investment and machinery costs on modern dairy farms are sizable items. Dairyfarmers who plan to grow more corn for grain must watch these items and keep them under control if they are to succeed in making better incomes.

Expenses per crop acre were higher on the farms growing corn for grain (Table 19). Total crop expense per crop acre was \$37 for those with no grain corn and \$62 for those with 200 or more acres. Fertilizer and lime accounted for the largest difference but the other items also were greater. In brief, more crop inputs are used per acre of corn for grain than on hay or cereal crops.

Table 19. CROP EXPENSES ON DAIRY FARMS GROUPED
BY ACRES CORN FOR GRAIN
600 New York Dairy Farms, 1980

Acres Corn for Grain	Expense Per Crop Acre For			Total
	Fertilizer & Lime	Seeds	Spray, etc.	
None	\$24	\$ 7	\$ 6	\$37
1 to 9	24	9	5	38
10 to 24	25	8	7	40
25 to 49	27	10	7	44
50 to 74	33	10	9	52
75 to 99	31	9	7	47
100 to 149	35	11	8	54
150 to 199	44	12	7	63
200 or more	39	11	12	62
All Farms	\$29	\$ 9	\$ 7	\$45

The rental expense per acre was higher on the farms with 100 or more acres of corn for grain than the other groups. This may suggest that those growing sizable acres of corn bid up the rental rates in order to get available land. It may also indicate that better land was rented for growing corn for grain.

Hired labor expense per worker month hired in general was higher on the farms with more acres of corn for grain (Table 20). This is likely more a function of the larger business than of the corn for grain. Studies have shown that larger and more profitable farms tend to pay better wages than the smaller and less profitable operations.

Table 20. RENT AND WAGES OF DAIRY FARMS GROUPED
BY ACRES CORN FOR GRAIN
600 New York Dairy Farms, 1980

Acres Corn for Grain	Hired Labor		Expense Per Month	Rented Land		Expense Per Acre
	Months	Expense		Acres	Expense	
None	10	\$ 7,209	\$ 721	50	\$1,190	\$24
1 to 9	7	4,134	591	45	788	18
10 to 24	10	7,134	713	77	1,888	25
25 to 49	12	10,645	887	71	2,210	31
50 to 74	16	13,632	852	102	2,666	26
75 to 99	23	20,048	872	157	3,558	23
100 to 149	27	29,090	1,077	129	4,332	34
150 to 199	33	34,671	1,051	130	5,304	41
200 or more	50	56,979	1,140	240	9,119	38
All Farms	14	\$11,683	\$ 835	76	\$2,074	\$27

Business Characteristics

The farms growing corn for grain were generally distributed over the state as indicated by the number of counties represented in each group. For example, the 36 farms in the 100 to 149 acres group were located in 19 different counties (Table 21).

Table 21. BUSINESS CHARACTERISTICS OF DAIRY FARMS GROUPED
BY ACRES CORN FOR GRAIN
600 New York Dairy Farms, 1980

Acres Corn for Grain	Counties Repre- sented	% Barns Freestall	% With Dairy Records	Average Number Operators	Operator's Ave	
					Age	Years School
None	35	23%	75%	1.2	41	13
1 to 9	19	15	85	1.2	42	13
10 to 24	26	29	92	1.3	41	13
25 to 49	29	28	86	1.3	41	13
50 to 74	30	46	86	1.3	40	13
75 to 99	16	50	93	1.2	45	13
100 to 149	19	69	92	1.5	41	14
150 to 199	7	83	75	1.5	42	13
200 or more	9	100	69	1.5	40	14
All Farms	49	33%	81%	1.3	41	13

A higher proportion of the farms growing 50 acres or more of corn for grain had freestall barns. Only 23 percent of the no corn for grain farms had freestalls compared with 100 percent of those with 200 or more acres of corn for grain. A somewhat higher percent of the corn for grain farms had dairy records. The farms with corn for grain also had more multi-operator arrangements which are probably associated with the larger size businesses. There was no apparent difference in age of operators or years of school for the groups growing various amounts of corn for grain.

Relation of Acres Grain Corn Per Cow to Business Factors

In the previous section the analysis was based on the total acres of grain corn. This section examines the acres of grain corn per cow. For each farm the total acres of grain corn was divided by the number of cows to determine the acres of grain corn per cow. This measure indicates the intensity of the grain corn growing in relation to the size of the herd.

Acres of grain corn per cow involves a balance between the acres available for growing corn for grain and the size of the herd. Each manager must decide on what kind of a balance might be optimal for the business. The experience of the farmers, as shown in this section of the analysis, may be helpful in deciding on the optimum acres of grain corn per cow.

The farms growing corn for grain were divided into five groups ranging from .1 to .3 acres per cow to 1.3 or more. The largest numbers of farms were in the .1 to .3 and .4 to .6 groups. More than half (54 percent) of the farms were in these two groups. However, there were 37, or 12 percent, of the farms with 1.3 or more acres of grain corn per cow (Table 22).

The farms with .1 to .3 acres of grain corn per cow were somewhat smaller in size with an average of 79 cows compared with 87 to 95 for the other groups. There did not appear to be any relationship between size of herd and acres of grain corn per cow for those with .4 or more acres per cow.

Acres Grain Corn Per Cow and Income

Net cash farm income and labor and management income per operator are two common measures of success in farm businesses. When the farms were grouped according to the acres of grain corn per cow, the net cash farm income and the labor and management income each increased to the group with .7 to .9 acres per cow and then decreased. This suggests that from the standpoint of income, .7 to .9 acres or about three-fourths of an acre of grain corn per cow may be optimal.

Table 22. ACRES GRAIN CORN PER COW AND INCOME
600 New York Dairy Farms, 1980

Acres Grain Corn Per Cow	Number Farms	Number Cows	Net Cash Farm Income	Labor & Mgt. Income/Oper.	Labor, Mgt. & Ownership Income/Oper.
None	289	61	\$27,829	\$ -634	\$32,549
.1 to .3	84	79	39,425	2,547	40,499
.4 to .6	86	88	42,619	2,633	45,408
.7 to .9	54	89	47,075	5,541	52,185
1.0 to 1.2	50	95	46,214	3,892	55,117
1.3 or more	37	87	45,683	88	57,298

The measure of labor, management, and ownership income per operator indicates the total return to the operator including interest returns on equity capital and appreciation. With somewhat higher capital per cow for those growing more acres of grain corn per cow, this measure of income continued to increase up to the highest group of 1.3 or more acres per cow (Table 22).

Crops Grown

Use of the cropland on the farms when grouped according to acres of grain corn per cow are shown in Table 23. Farms with more grain corn per cow had more total crop acres but fewer crop acres per cow. Farms with no grain corn had 3.0 crop acres per cow while those with 1.0 to 1.2 acres of grain corn per cow only had 2.2 crop acres per cow.

Table 23. ACRES GRAIN CORN PER COW AND CROPS GROWN
600 New York Dairy Farms, 1980

Acres Grain Corn Per Cow	Total Crop Acres	Crop Acres Per Cow	Acres Per Cow of			% Crop Acres in All Corn
			Hay	Corn Silage	Corn Grain	
None	185	3.0	1.90	.77	---	25
.1 to .3	256	2.6	1.73	.77	.23	31
.4 to .6	286	2.4	1.67	.74	.50	38
.7 to .9	303	2.3	1.62	.62	.79	41
1.0 to 1.2	344	2.2	1.52	.68	1.07	49
1.3 or more	392	2.4	1.80	.54	1.55	46

The acres of hay and corn silage per cow, in general, decreased as the acres of grain corn per cow increased. The farms with more acres of grain corn per cow also had a higher percent of the crop acres in corn, ranging from 25 percent for those with no grain corn, to 49 percent for those with 1.0 to 1.2 acres per cow.

Crop Yields

Crop yields are an important factor affecting dairy farm businesses. The farms with more acres of grain corn per cow also had higher yields of hay crops. This may have been a factor in making more land available for growing corn for grain. For all forage crops the average yield per acre was directly related to the acres of grain corn per cow (Table 24).

Table 24. ACRES GRAIN CORN PER COW AND CROP YIELDS
600 New York Dairy Farms, 1980

Acres Grain Corn Per Cow	Yield Per Acre (tons D.M.)			Bu. Grain Corn/Acre	Bu. Oats Per Acre	Value Real Estate Per Crop Acre
	Hay Crops	Corn Silage	All Forages			
None	2.2	14.2	3.0	71	45	\$1,174
.1 to .3	2.4	14.9	3.2	86	59	1,189
.4 to .6	2.6	14.7	3.3	94	60	1,181
.7 to .9	2.7	15.7	3.5	97	72	1,172
1.0 to 1.2	2.8	15.6	3.7	89	58	1,253
1.3 or more	2.8	14.3	3.4	91	43	1,115

Yield of grain corn and oats varied for the various groups of acres of grain corn per cow. Similarly, the value of real estate per crop acre owned showed no relationship to acres of grain corn per cow. The value per acre is assumed to be a measure of the quality of the land.

Related Factors

Farms growing more acres of grain corn per cow had more workers than those with no grain corn. Those with no grain corn averaged 2.3 worker equivalents while those with grain corn ranged from 2.8 to 3.2 workers (Table 25).

Barn type is indicated here by the percent of farms with freestall barns. The groups of farms with more grain corn per cow also had a higher percentage of freestall barns. This likely indicates a trend in the use of different corn growing practices as an operator goes to freestall housing.

Milk sold per cow and per worker both were higher on the farms with more grain corn per cow. Farms with no grain corn averaged 26 cows per worker while those with corn for grain averaged from 27 to 31 cows per worker, which is a measure of labor efficiency. This is likely interrelated with barn type, too.

Table 25. ACRES GRAIN CORN PER COW AND RELATED FACTORS
600 New York Dairy Farms, 1980

Acres Grain Corn Per Cow	Worker Equivalent	% Free- stall Barns	Lbs. Milk Sold		Cows Per Worker
			Per Cow	Per Worker	
None	2.3	23	13,900	366,200	26
.1 to .3	2.8	38	14,600	421,900	29
.4 to .6	3.1	42	14,600	417,200	29
.7 to .9	3.2	43	15,200	428,200	28
1.0 to 1.2	3.1	48	14,200	438,800	31
1.3 or more	3.2	46	15,500	427,000	27

Cost Control

Feed is the largest cost item on a dairy farm, so control of feed costs is important. Several factors are usually examined as they relate to feed costs. These are reported in Table 26.

There appeared to be no relation between the acres of grain corn per cow and the tons of forage dry matter per cow. This suggests that the production of an adequate roughage supply had a priority over the acres of grain corn grown per cow. In contrast, feed bought per cow decreased as the acres of grain corn per cow increased. Farms with no grain corn averaged \$564 of purchased feed per cow while those with 1.0 to 1.2 averaged \$380 per cow. Similarly, the percent that purchased feed was of milk receipts was 32 for the no grain corn farms compared with 20 percent for those with 1.3 or more acres of grain corn per cow. This is logical since the grain corn produced was used as feed and in turn reduced the amount of concentrates that had to be purchased.

Table 26. ACRES GRAIN CORN PER COW AND FEED COST FACTORS
600 New York Dairy Farms, 1980

Acres Grain Corn Per Cow	Forage D.M. tons Per Cow	Feed Bought Per Cow	% Feed is of Milk	Feed & Crop Exp.		Heifers as % of Cows
				Per Cow	Per Cwt. Milk	
None	8.1	\$564	32%	\$673	\$4.81	70%
.1 to .3	8.4	551	29	690	4.70	78
.4 to .6	8.1	478	25	628	4.30	74
.7 to .9	8.0	427	22	614	4.03	81
1.0 to 1.2	8.4	380	21	580	4.08	79
1.3 or more	8.0	403	20	646	4.15	84

There are costs involved with the growing of corn for grain. Two measures used in checking on feed cost control are feed and crop expenses per cow and per hundredweight of milk sold. Feed and crop expenses per cow averaged \$673 for farms with no grain corn and only \$580 for those with 1.0 to 1.2 acres of grain corn per cow. Likewise, the feed and crop expense per hundredweight of milk sold averaged \$4.81 for the farms with no grain corn and \$4.03 for those with .7 to .9 acres of grain corn per cow. These suggest that growing more grain corn per cow did help to control feed costs.

Fertilizer and lime expenses per crop acre increased as the acres of grain corn per cow increased. This is a reflection of the greater use of fertilizers on corn than on hay and some other crops.

Real estate expenses include taxes, insurance, and building repairs. Total real estate expenses per cow tended to be greater on the farms that grew more grain corn per cow (Table 27).

Labor and machinery costs are frequently examined together since there is a complimentary feature in the two items. Machinery is often added to save labor. For these farms, the machinery cost per hundredweight of milk increased as the amount of grain corn per cow increased while labor costs changed little.

Total farm expenses per cow, which is a measure of overall cost control, showed little relationship to the acres of grain corn per cow.

Table 27. ACRES GRAIN CORN PER COW AND RELATED EXPENSE ITEMS
600 New York Dairy Farms, 1980

Acres Grain Corn Per Cow	Fert. & Lime Per Crop Acre	Real Est. Exp./Cow	Cost Per Cwt. Milk		Total Farm Exp./Cow
			Machinery	Labor	
None	\$24	\$122	\$2.76	\$2.31	\$2,120
.1 to .3	26	142	2.83	2.24	2,236
.4 to .6	30	134	2.93	2.31	2,222
.7 to .9	34	155	3.18	2.30	2,305
1.0 to 1.2	36	147	3.33	2.31	2,218
1.3 or more	36	170	3.44	2.23	2,520

Capital Management

Growing corn for grain requires the use of more kinds of machinery. Some may be rented or hired but most of it is owned by the dairyfarmer. As the acres of grain corn per cow increased, so did the machinery inventory per cow. The average machinery inventory per cow for farms with no grain corn was \$386 compared with \$536 for farms with 1.3 or more acres of grain corn per cow (Table 28).

Total farm capital per cow also tended to increase as the acres of grain corn per cow increased. This involves more than just the increase in machinery. Real estate and other inventory items apparently also were higher on farms that grew more acres of grain corn per cow. The increase was gradual for the different groups except those with 1.3 or more acres of grain corn per cow.

Debt per cow, percent equity, and debt payments per cow showed no definite relationships with the acres of grain corn per cow. The debt situation apparently is independent of the amount of grain corn grown per cow.

Table 28. ACRES GRAIN CORN PER COW AND CAPITAL FACTORS
600 New York Dairy Farms, 1980

Acres Grain Corn Per Cow	Mach. Inv. Per Cow	Farm Capital Per Cow	Debt Per Cow	Debt Pymts. Per Cow	Percent Equity
None	\$386	\$5,286	\$1,972	\$391	66%
.1 to .3	416	5,342	1,988	406	66
.4 to .6	428	5,483	1,994	427	67
.7 to .9	486	5,662	2,182	442	64
1.0 to 1.2	473	5,675	1,964	400	68
1.3 or more	536	6,931	2,585	490	66

Herd Size and Factors Related to Growing Corn

Size of business is a major factor affecting incomes on dairy farms. Size has many indirect as well as direct effects on the management of a dairy operation. For this reason the 600 farms have been divided into nine herd size groups and then the various crop and animal practices have been observed. This gives some clues as to the interrelatedness of certain management practices.

Table 29. USE OF LAND BY SIZE OF HERD
600 New York Dairy Farms, 1980

Herd Size (No. Cows)	Number Farms	Worker Equivalent	Total Crop Acres	% Farms Renting Cropland	% of Total Crop Acres Rented
Under 40	94	1.6	122	65%	28%
40 to 54	147	2.0	169	69	24
55 to 69	128	2.4	218	73	29
70 to 84	77	2.9	255	77	31
85 to 99	38	3.0	319	89	38
100 to 114	26	3.5	321	88	38
115 to 129	24	3.6	386	88	34
130 to 149	19	4.1	403	95	42
150 or more	47	5.1	560	89	30

The average herd size of the 600 farms was 75 cows. The two groups with the largest number of farms were the 40 to 54 and 55 to 69 cow groups. Those two groups accounted for nearly one-half of the farms, but there was a reasonable distribution of the larger farms with 47 farms having 150 or more cows.

Total crop acres was larger on the farms with larger herds. This suggests that the growing of crops was correlated with the range in size of herds.

Renting of cropland has been increasing in recent years. The percent of farms renting some cropland was higher for the larger size herds but significant for all size groups. For herds with under 40 cows, 65 percent of the farms rented some cropland while for herds with over 100 cows, the percentage renting cropland ranged from 88 to 95 percent. The percent of total crop acres rented varied less than the percent of farms renting, but farms with larger herds rented a larger percentage of the cropland than did those with smaller herds (Table 29).

In summary, renting of cropland was important for all herd size groups but tended to be more important on the larger farms than on the smaller farms.

Herd Size and Farm Income

The value of land and buildings per crop acre owned is used here as a measure of the quality of cropland. This may not be the best measure but is the one available from these data. There seemed to be no direct relationship between the size of herd and the quality of land as shown by value per crop acre owned (Table 30).

Table 30. INVESTMENT AND FARM INCOME BY HERD SIZE
600 New York Dairy Farms, 1980

Herd Size (No. Cows)	Value Land & Bldgs./Crop Acre Owned	Net Cash Farm Income Per			Labor, Mgmt. & Ownership Income Per Operator
		Farm	Crop Acre	Cow	
Under 40	\$1,204	\$15,848	\$130	\$480	\$20,809
40 to 54	1,105	23,293	138	496	29,085
55 to 69	1,180	32,114	147	518	34,715
70 to 84	1,251	37,220	146	490	40,306
85 to 99	1,111	37,173	117	413	39,311
100 to 114	1,295	54,320	169	512	58,120
115 to 129	1,093	54,718	142	456	60,880
130 to 149	1,315	54,043	134	389	58,419
150 or more	1,188	95,917	171	484	92,128

Net cash farm income per farm and per crop acre tended to be higher on the farms with larger size herds. The net cash income per farm for the under 40 cow group was \$15,848 compared with \$95,917 for the 150 or more cow group. The net cash income per crop acre was \$130 for the under 40 cow group and \$171 for the 150 or more cow group. Some of this is likely due to the higher proportion of cropland used for growing corn on the larger farms. Net cash farm income per cow varied for the nine size groups but showed no close relationship to the size factor.

Labor, management, and ownership income per operator, which is a measure of return to the farmer for his labor, management, equity capital, and appreciation, tended to be higher on the larger farms. In brief, the owners of the larger businesses earned more from the combined inputs they had in the business than did those with smaller businesses.

Crops Grown

The crop practices followed were of concern in this management study of growing corn on dairy farms. Four major crops were examined, namely hay, haylage, corn silage, and grain corn. These were studied from the standpoint of the percent of farms growing each and the percent of total crop acres used for growing corn.

Table 31. PERCENT OF FARMS GROWING CROPS BY HERD SIZE
600 New York Dairy Farms, 1980

Herd Size (No. Cows)	Percent of Farms Growing				Percent of Crop Acres in	
	Dry Hay	Haylage	Corn Silage	Grain Corn	Corn Silage	Grain Corn
Under 40	97%	29%	70%	21%	12%	4%
40 to 54	95	51	88	44	18	8
55 to 69	92	67	97	55	20	11
70 to 84	96	60	97	62	24	13
85 to 99	95	79	97	68	19	14
100 to 114	92	50	100	76	23	18
115 to 129	79	67	96	79	23	20
130 to 149	84	79	100	58	30	17
150 or more	66	91	100	74	29	20

Dry hay was grown by a high percentage of the farms in all herd size groups. However, the percentage of farms was somewhat less for the herds with over 100 cows. At the same time, the percentage of farms reporting haylage tended to be higher on the farms with larger herds. The fact that 91 percent of the farms with 150 or more cows reported haylage but only 66 percent reported dry hay suggests that most of the large herd farms did have hay but more of them harvested it as haylage which is in line with recommended practices.

Corn silage was grown on most farms but a higher proportion of the larger farms reported corn silage. Only 70 percent of the farms with under 40 cows and 88 percent of those with 40 to 54 cows reported growing corn silage. Growing corn silage appears to be an important factor for maintaining a medium to large size herd on New York dairy farms.

The grain corn is often grown only after enough corn has been grown to provide the corn silage needed to feed the herd. It is of interest to note that the percent of farms harvesting grain corn tended to increase with the size of herds.

The proportion of cropland used for growing corn is a key item in this study. The farms with under 40 cows only used 16 percent of the cropland for growing corn compared with 49 percent for the farms with 150 cows or more. The percent of cropland used for growing corn increased steadily as the size of herds increased.

Table 32. ACRES PER COW OF SELECTED CROPS BY SIZE OF HERD
600 New York Dairy Farms, 1980

Herd Size (No. Cows)	Acres Per Cow				Tons H.E. Per Cow
	Dry Hay	Haylage	Corn Silage	Grain Corn	
Under 40	2.14	.32	.47	.13	7.0
40 to 54	1.56	.56	.66	.28	8.2
55 to 69	1.19	.79	.70	.37	8.4
70 to 84	1.13	.65	.79	.43	8.4
85 to 99	1.12	.82	.69	.49	8.8
100 to 114	.97	.53	.70	.54	7.5
115 to 129	.77	.77	.73	.63	8.3
130 to 149	.64	.70	.86	.50	8.1
150 or more	.39	.79	.81	.56	8.1

One of the important organization challenges for New York dairyfarmers is to develop a good balance between the available land resources and the size of herd as measured by number of cows. This depends in part on the quality of cropland available and in part on the specific crops the farmer decides to grow.

In this section, the acres of feed crops grown per cow were examined by size of herd. There seems to be a relationship between size of herd and feed crops grown (Table 32).

The larger sized herds had less acres of dry hay per cow than the smaller herds. The average ranged from 2.14 acres for the herds with under 40 cows to .39 acres for herds with 150 and more cows. In contrast, the larger herds had more acres per cow of haylage than the smaller herds.

Acres of corn silage and of grain corn per cow tended to be greater on the larger size farms. Farms with under 40 cows averaged .60 acres of corn silage and grain corn per cow while those with over 115 cows averaged 1.36 or more than twice as many acres of corn per cow.

Corn in general produces more feed per acre than does hay. Consequently the larger farms were using more of their cropland for higher feed producing crops.

In the farm business records all roughages are converted to tons of dry hay equivalent and then a measure of tons of hay equivalents (H.E.) per cow is calculated. With the exception of the under 40 and 100 to 114 cow groups all size groups averaged more than 8.0 tons of hay equivalent per cow. This includes the roughage used for both cows and replacement heifers.

Crop Yields and Expenses

Crop yields per acre of corn silage and grain corn tended to be higher on the farms with larger herds. The corn silage yield per acre for the farms with under 40 cows in 1980 averaged 13.0 tons compared with an average yield of 16.0 tons for the farms with 150 or more cows. This means that more feed was being produced per acre of corn silage on the larger farms.

Grain corn yields also tended to be higher on the farms with larger herds. The difference in grain corn yields by size of herd groups, however, was not large. The range was from 83 bushels per acre for the farms with under 40 cows to 99 bushels for the herds with 100 to 114 cows. The farms with over 100 cows averaged more than 90 bushels per acre while those with under 100 cows all averaged 90 bushels or less.

Table 33. YIELDS AND EXPENSES PER CROP ACRE BY HERD SIZE
600 New York Dairy Farms, 1980

Herd Size (No. Cows)	Tons Per Acre Corn Silage	Bu. Per Acre Grain Corn	Fert. & Lime Exp. Per Crop Acre	Rent Paid Per Crop Acre	Taxes/ Crop Acre Owned	Wage Paid Per Month
Under 40	13.0	83	\$16	\$18	\$18	\$ 507
40 to 54	13.9	89	22	23	17	628
55 to 69	13.3	86	27	27	19	721
70 to 84	14.0	89	31	27	22	784
85 to 99	14.6	90	27	23	19	907
100 to 114	14.8	99	36	26	22	794
115 to 129	16.4	91	33	29	21	888
130 to 149	15.7	93	35	27	22	995
150 or more	16.0	95	36	36	20	1,163

Farms with larger size herds spent more per acre for fertilizer and lime. This may be a reflection of the growing of more corn which, in general, requires more fertilizer than hay crops. Another feature is that the use of more fertilizer and lime is considered to be a good crop practice. This may suggest that the farms with larger size herds were using better crop management practices than were the farms with smaller herds.

Rent paid per acre of cropland rented ranged from \$18 to \$36. The larger farms tended to pay higher rent per acre. This may have been to get more land or to get better land or both. The variation in real estate taxes per crop acre owned was from \$17 to \$22, with an indication that they were slightly higher for herds with 100 or more cows.

Wages paid per month for hired labor was higher on the farms with larger herds. This is consistent with studies of farm wages which show the larger, more profitable businesses pay higher wages.

Summary

Dairy operations have changed markedly over the past 25 years as shown by the New York farm business summaries. Size as measured by number of cows and acres of crops grown has more than doubled while average number of workers increased by less than 50 percent. Renting cropland has become important and in 1980 rented cropland accounted for 31 percent of the total acres in crops.

Uses of cropland changed during this period. Total crop acres per cow held at about 3.0 but acres of hay crops decreased from 1.9 to 1.7 per cow while corn silage increased from .3 to .8 acres per cow and grain corn from .06 to .40. The ratio of acres of hay crops to acres of corn silage decreased from 5.3 to 1.0 in 1956-60 to 2.2 to 1.0 in 1976-80. Corn accounted for 16 percent of the total crop acres in the earlier period and 37 percent in the recent periods.

Fifty-two percent of the 600 farms in the 1980 New York dairy farm business summary harvested some corn for grain. One farm out of four had 50 or more acres. The farms growing corn for grain were scattered throughout the State.

The net cash farm incomes and the labor and management income per operator tended to be higher for the farms with corn for grain than for those with none. The average net cash farm income for farms with 200 or more acres of corn for grain was \$95,631 compared with \$27,729 for those with no corn for grain. It must not be assumed that all the difference was due to the corn for grain as many factors affect incomes.

Rates of production, labor efficiency, and cost control, in general, were better on farms that grew larger acreages of corn for grain. For example, the pounds of milk sold per cow on farms with no grain corn averaged 13,900 while farms with 200 or more acres of grain corn averaged 15,200. Milk sold per worker on farms with no grain corn averaged 365,000 pounds compared with 545,000 for those with 150 to 199 acres of grain corn. The feed and crop expenses per hundredweight of milk sold averaged \$4.82 for those with no grain corn compared with \$3.96 for those with 200 acres or more of grain corn.

These farms were studied on the basis of acres of grain corn per cow. Farms with .7 to .9 acres of grain corn had the best incomes. This suggests that about three-fourths of an acre of grain corn per cow may be optimal. Farms with .7 or more acres of grain corn per cow were using from 41 to 49 percent of their cropland for growing corn, including both silage and grain.

Size is an important business factor. The 600 farms were divided into seven groups based on herd size and studied. The larger the herd size the higher the percent of farms that rented some cropland. The larger farms also rented a larger proportion of the total cropland operated. The farms with under 40 cows grew corn on an average of 16 percent of the cropland compared with 49 percent for those with 150 cows or more. Farms with larger herds tended to have better incomes which may have been in part due to the growing of more corn.

In the last 25 years there has been a substantial increase in the growing of corn on New York dairy farms. Corn now accounts for about one-third of the total crop acres. Grain corn production is also increasing. Farms growing more acres of grain corn, both total and per cow, tended to have better incomes. Farmers were renting more land in order to grow more corn. In brief, it paid in 1980 to grow more corn on dairy farms.

Appendix

The purpose of this study was to provide information based on the experience of farmers which could be used in evaluating alternatives concerning the growing of corn on New York dairy farms. These data must be used judiciously since, due to interrelationships, it is easy to attribute effects to the wrong or partially wrong causes.

Many questions arise in studying the corn growing experiences of the 600 farms. The farm business summary for the 600 farms, selected business factors by acres of corn for grain and acres of grain corn per cow, and the general operating statements for five groups of farms by acres of corn for grain, are presented in the appendix for use in making comparisons.

FARM BUSINESS SUMMARY
Average 600 New York Dairy Farms, 1980

CAPITAL INVESTMENT

	<u>1/1/80</u>	<u>1/1/81</u>
Livestock	\$102,879	\$117,709
Feed & supplies	25,702	30,311
Machinery & equipment	68,457	78,131
Land & buildings	183,852	200,319
TOTAL INVESTMENT	\$380,890	\$426,470

EXPENSESLabor

Hired \$11,683

Feed

Dairy concentrate 37,293
Hay & other 1,489

Machinery

Machine hire 1,161
Machinery repair 6,892
Auto expense 413
Gas & oil 5,856

Livestock

Replacement livestock 3,141
Breeding fees 1,738
Veterinary, medicine 2,606
Milk marketing 3,740
Other livestock expense 5,102

Crops

Lime & fertilizer 7,102
Seeds & plants 2,167
Spray & other 1,750

Real Estate

Land, building, fence repair 2,285
Taxes 3,298
Insurance 2,531
Rent 2,074

Other

Telephone (farm share) 475
Electricity (farm share) 2,548
Interest paid 12,576
Miscellaneous 1,888

TOTAL CASH EXPENSES \$119,808

Expansion livestock 1,753
Machinery depreciation 10,938
Building depreciation 4,398
Unpaid labor 1,500
Interest on farm equity @ 9% 25,922

TOTAL FARM EXPENSES \$164,319

RECEIPTS

Milk sales \$137,829
Crop sales 1,728
Dairy cattle sold 11,144
Livestock sales 2,860
Gas tax refund 144
Government payments 422
Custom machine work 199
Miscellaneous 1,422

TOTAL CASH RECEIPTS \$155,748

Increase in livestock 5,918
Increase in feed & supplies 4,609
Appreciation 23,695

TOTAL FARM RECEIPTS \$189,970

**TOTAL FARM RECEIPTS EXCLUDING
APPRECIATION** \$166,275

FINANCIAL SUMMARY

Total Cash Receipts \$155,748
Total Cash Expenses 199,808

NET CASH FARM INCOME \$ 35,940

Total Farm Receipts Excluding
Appreciation \$166,275
Total Farm Expenses 164,319

LABOR & MGMT. INCOME PER FARM \$ 1,956
Number of operators (750) 1.25
LABOR & MGMT. INCOME PER OPER. \$ 1,565

BUSINESS FACTORS

Worker equivalent 2.7
Number of cows 75
Number of heifers 56
Acres of hay crops 131
Acres of corn silage 60
Total tillable acres 246
Pounds of milk sold 1,076,100
Pounds of milk sold per cow 14,300
Tons hay crops per acre 2.5
Tons corn silage per acre 14.5
Lbs. of milk sold per worker 403,000
Cows per worker 28
% feed is of milk receipts 27%
Feed & crop expense per cwt. milk \$4.49
Fertilizer & lime/tillable acre \$29
Machinery cost per cow \$425
Average price per cwt. milk \$12.81

SELECTED BUSINESS FACTORS BY ACRES CORN FOR GRAIN
600 New York Dairy Farms, 1980

Business Factors	Acres Corn For Grain			
	none	1-9	10-24	25-49
Number of farms	287	27	63	71
Percent of total	48%	5%	10%	12%
<u>Crops Grown</u>				
Acres grain corn	--	6	17	34
Acres corn silage	47	39	40	50
Total crop acres	184	155	212	244
Crop acres rented	50	45	77	71
<u>Size of Business</u>				
Number of workers	2.3	2.0	2.4	2.6
Number of cows	61	51	60	72
Cash receipts	\$121,347	\$103,416	\$128,270	\$151,887
<u>Rates of Production</u>				
Tons H.E. per acre hay	2.2	2.4	2.3	2.5
Tons corn silage per acre	14.1	13.2	14.4	14.6
Bushels corn per acre	--	77	87	89
Pounds milk per cow	13,900	14,000	14,600	14,600
<u>Labor Efficiency</u>				
Crop acres per worker	80	78	88	94
Pounds milk per worker	365,100	358,300	363,200	409,600
<u>Feed Costs</u>				
Feed bought per cow	\$564	\$513	\$542	\$486
Feed as percent of milk	32%	28%	29%	26%
Feed & crop exp./cwt. milk	\$4.82	\$4.48	\$4.68	\$4.31
<u>Labor & Machinery</u>				
Machinery cost per cow	\$385	\$431	\$449	\$431
Labor cost per cow	\$323	\$316	\$340	\$335
Machinery invest. per cow	\$968	\$1,147	\$1,144	\$1,024
<u>Other Costs</u>				
Fert. & lime per crop acre	\$24	\$24	\$25	\$27
Rent per crop acre	\$24	\$18	\$23	\$25
Total farm expenses per cow	\$2,115	\$2,113	\$2,258	\$2,201
<u>Other</u>				
Percent freestall barns	23%	15%	29%	28%
Value land & buildings per crop acre owned	\$1,174	\$1,185	\$1,259	\$1,191
<u>Financial Summary</u>				
Net cash farm income	\$27,729	\$26,815	\$30,109	\$35,902
Labor & management income per operator	\$-712	\$775	\$238	\$4,931
Average price for milk	\$12.79	\$12.82	\$12.85	\$12.72

SELECTED BUSINESS FACTORS BY ACRES CORN FOR GRAIN
600 New York Dairy Farms, 1980

Business Factors	Acres Corn For Grain			
	50-74	75-99	100-149	150+
Number of farms	63	28	36	25
Percent of total	10%	5%	6%	4%
<u>Crops Grown</u>				
Acres grain corn	61	8	112	215
Acres corn silage	60	66	82	129
Total crop acres	200	264	438	600
Crop acres rented	101	157	129	187
<u>Size of Business</u>				
Number of workers	2.8	3.3	4.0	5.1
Number of cows	82	99	127	177
Cash receipts	\$179,256	\$208,494	\$281,482	\$388,049
<u>Rates of Production</u>				
Tons H.E. per acre hay	2.6	2.5	3.0	3.2
Tons corn silage per acre	14.5	14.2	16.5	15.7
Bushels corn per acre	92	87	94	93
Pounds milk per cow	15,000	14,200	14,900	15,000
<u>Labor Efficiency</u>				
Crop acres per worker	107	130	110	118
Pounds milk per worker	447,300	442,600	474,100	523,500
<u>Feed Costs</u>				
Feed bought per cow	\$460	\$443	\$417	\$398
Feed as percent of milk	24%	24%	22%	21%
Feed & crop exp./cwt. milk	\$4.33	\$4.32	\$4.04	\$4.07
<u>Labor & Machinery</u>				
Machinery cost per cow	\$481	\$443	\$463	\$465
Labor cost per cow	\$316	\$324	\$347	\$341
Machinery invest. per cow	\$1,104	\$1,021	\$954	\$959
<u>Other Costs</u>				
Fert. & lime per crop acre	\$33	\$31	\$35	\$41
Rent per crop acre	\$21	\$20	\$29	\$35
Total farm expenses per cow	\$2,313	\$2,262	\$2,327	\$2,289
<u>Other</u>				
Percent freestall barns	46%	50%	69%	92%
Value land & buildings per crop acre owned	\$1,148	\$1,278	\$1,104	\$1,180
<u>Financial Summary</u>				
Net cash farm income	\$43,544	\$43,594	\$61,611	\$90,101
Labor & management income per operator	\$1,691	\$-1,866	\$4,572	\$13,498
Average price for milk	\$12.88	\$13.08	\$12.82	\$12.65

SELECTED BUSINESS FACTORS BY ACRES GRAIN CORN PER COW
600 New York Dairy Farms, 1980

Business Factors	Acres Grain Corn Per Cow:		
	none	.1 to .3	.4 to .6
Number of farms	289	84	86
Percent of total	48%	14%	14%
<u>Crops Grown</u>			
Acres grain corn	--	18	44
Acres corn silage	47	61	65
Total crop acres	185	256	186
Crop acres rented	50	83	85
<u>Size of Business</u>			
Number of workers	2.3	2.8	3.1
Number of cows	61	79	88
Cash receipts	\$121,728	\$168,405	\$185,862
<u>Rates of Production</u>			
Tons H.E. per acre hay	2.2	2.4	2.6
Tons corn silage per acre	14.2	14.9	14.7
Bushels corn per acre	71	86	94
Pounds milk per cow	13,900	14,600	14,600
<u>Labor Efficiency</u>			
Crop acres per worker	80	91	92
Pounds milk per worker	366,200	421,900	417,200
<u>Feed Costs</u>			
Feed bought per cow	\$564	\$551	\$478
Feed as percent of milk	32%	29%	25%
Feed & crop exp./cwt. milk	\$4.81	\$4.70	\$4.30
<u>Labor & Machinery</u>			
Machinery cost per cow	\$386	\$416	\$428
Labor cost per cow	\$324	\$329	\$337
Machinery invest. per cow	\$968	\$1,010	\$977
<u>Other Costs</u>			
Fert. & lime per crop acre	\$24	\$26	\$30
Rent per crop acre	\$24	\$26	\$26
Total farm expenses per cow	\$2,120	\$2,236	\$2,222
<u>Other</u>			
Percent freestall barns	23%	38%	42%
Value land & buildings per crop acre owned	\$1,174	\$1,189	\$1,181
<u>Financial Summary</u>			
Net cash farm income	\$27,829	\$39,425	\$42,619
Labor & management income per operator	\$-634	\$2,547	\$2,633
Average price for milk	\$12.80	\$12.80	\$12.85

SELECTED BUSINESS FACTORS BY ACRES GRAIN CORN PER COW
600 New York Dairy Farms, 1980

Business Factors	Acres Grain Corn Per Cow:		
	.7 to .9	1.0 to 1.2	1.3+
Number of farms	54	50	37
Percent of total	9%	8%	6%
<u>Crops Grown</u>			
Acres grain corn	70	102	135
Acres corn silage	55	65	47
Total crop acres	303	344	392
Crop acres rented	109	129	117
<u>Size of Business</u>			
Number of workers	3.2	3.1	3.2
Number of cows	89	95	87
Cash receipts	\$198,160	\$199,480	\$201,759
<u>Rates of Production</u>			
Tons H.E. per acre hay	2.7	2.8	2.8
Tons corn silage per acre	15.7	15.6	14.3
Bushels corn per acre	97	89	91
Pounds milk per cow	15,200	14,200	15,500
<u>Labor Efficiency</u>			
Crop acres per worker	94	111	123
Pounds milk per worker	428,200	438,800	427,000
<u>Feed Costs</u>			
Feed bought per cow	\$427	\$380	\$403
Feed as percent of milk	22%	21%	20%
Feed & crop exp./cwt. milk	\$4.03	\$4.08	\$4.15
<u>Labor & Machinery</u>			
Machinery cost per cow	\$486	\$473	\$536
Labor cost per cow	\$351	\$329	\$347
Machinery invest. per cow	\$1,117	\$1,015	\$1,189
<u>Other Costs</u>			
Fert. & lime per crop acre	\$34	\$36	\$36
Rent per crop acre	\$36	\$27	\$31
Total farm expenses per cow	\$2,305	\$2,218	\$2,520
<u>Other</u>			
Percent freestall barns	43%	48%	46%
Value land & buildings per crop acre owned	\$1,172	\$1,253	\$1,115
<u>Financial Summary</u>			
Net cash farm income	\$47,075	\$46,214	\$45,683
Labor & management income per operator	\$5,541	\$3,892	\$88
Average price for milk	\$12.80	\$12.87	\$12.72

FARM BUSINESS SUMMARY
Average of 287 New York Dairy Farms, 1980
No Corn for Grain

<u>CAPITAL INVESTMENT</u>		<u>End of Year</u>	<u>RECEIPTS</u>	
Livestock		\$ 95,803	Milk sales	\$108,864
Feed & supplies		18,764	Crop sales	511
Machinery & equipment		60,960	Dairy cattle sold	8,174
Land & buildings		157,270	Other livestock sales	2,388
			Gas tax refund	104
TOTAL INVESTMENT		\$322,797	Government payments	296
			Custom machine work	109
			Miscellaneous	901
<u>EXPENSES</u>			TOTAL CASH RECEIPTS	\$121,347
Labor			Increase in livestock	4,532
Hired		\$ 7,209	Increase in feed & supplies	2,303
Feed			TOTAL FARM RECEIPTS	\$128,182
Dairy concentrate		34,385		
Hay & other		1,290		
Machinery			<u>FINANCIAL SUMMARY</u>	
Machine hire		653	Total Cash Receipts	\$121,347
Machinery repair		4,668	Total Cash Expenses	93,618
Auto expense		428	NET FARM CASH FLOW	\$ 27,729
Gas & oil		4,201	Total Farm Receipts	\$128,182
Livestock			Total Farm Expenses	129,029
Replacement livestock		3,213	LABOR & MANAGEMENT INCOME	
Breeding fees		1,277	PER FARM	\$ -877
Veterinary, medicine		1,940	Number of operators	1.2
Milk marketing		2,945	LABOR & MANAGEMENT INCOME	
Other livestock expense		3,762	PER OPERATOR	\$ -712
Crops			<u>BUSINESS FACTORS</u>	
Fertilizer & lime		4,340	Worker equivalent	2.3
Seeds & plants		1,261	Number of cows	61
Spray & other		1,033	Number of heifers	43
Real Estate			Acres of hay crops	115
Land, building, fence repair		1,754	Acres of corn silage	47
Taxes		2,569	Total acres of crops	184
Insurance		1,949	Lbs. of milk sold	850,900
Rent		1,190	Lbs. of milk sold per cow	13,900
Other			Tons hay crops per acre	2.2
Telephone (farm share)		411	Tons corn silage per acre	14.1
Electricity (farm share)		2,068	Cows per worker	26
Interest paid		9,709	Lbs. of milk sold/worker	365,100
Miscellaneous		1,363	% feed is of milk sales	32%
TOTAL CASH EXPENSES		\$ 93,618	Feed & crop exp./cwt. milk	\$4.82
Machinery depreciation		8,359	Fertilizer & lime/crop acre	\$24
Building depreciation		3,092	Machinery cost per cow	\$385
Unpaid labor		2,000	Average price per cwt. milk	\$12.79
Int. on farm equity @ 9%		20,113		
Expansion livestock		1,849		
TOTAL FARM EXPENSES		\$129,029		

FARM BUSINESS SUMMARY
Average of 63 New York Dairy Farms, 1980
50-74 Acres of Corn for Grain

<u>CAPITAL INVESTMENT</u>	<u>End of Year</u>	<u>RECEIPTS</u>	
Livestock	\$127,459	Milk sales	\$158,422
Feed & supplies	40,700	Crop sales	1,612
Machinery & equipment	93,839	Dairy cattle sold	12,814
Land & buildings	227,401	Other livestock sales	3,350
TOTAL INVESTMENT	\$489,399	Gas tax refund	171
		Government payments	819
		Custom machine work	309
		Miscellaneous	1,759
<u>EXPENSES</u>		TOTAL CASH RECEIPTS	\$179,256
Labor		Increase in livestock	5,434
Hired	13,632	Increase in feed & supplies	7,103
Feed		TOTAL FARM RECEIPTS	\$191,793
Dairy concentrate	37,687		
Hay & other	1,212	<u>FINANCIAL SUMMARY</u>	
Machinery		Total Cash Receipts	\$179,256
Machine hire	1,429	Total Cash Expenses	135,712
Machinery repair	8,377	NET FARM CASH FLOW	\$ 43,544
Auto expense	416	Total Farm Receipts	\$191,793
Gas & oil	7,182	Total Farm Expenses	189,662
Livestock		LABOR & MANAGEMENT INCOME	
Replacement livestock	4,449	PER FARM	\$ 2,131
Breeding fees	1,953	Number of operators	1.3
Veterinary, medicine	2,748	LABOR & MANAGEMENT INCOME	
Milk marketing	4,399	PER OPERATOR	\$ 1,691
Other livestock expense	5,506		
Crops		<u>BUSINESS FACTORS</u>	
Fertilizer & lime	10,038	Worker equivalent	2.8
Seeds & plants	3,015	Number of cows	82
Spray & other	2,575	Number of heifers	62
Real Estate		Acres of hay crops	143
Land, building, fence repair	2,345	Acres of corn silage	60
Taxes	4,035	Total acres of crops	300
Insurance	3,184	Lbs. of milk sold	1,230,300
Rent	2,666	Lbs. of milk sold per cow	15,000
Other		Tons hay crops per acre	2.6
Telephone (farm share)	553	Tons corn silage per acre	14.5
Electricity (farm share)	2,895	Cows per worker	30
Interest paid	13,084	Lbs. of milk sold/worker	447,300
Miscellaneous	2,332	% feed is of milk sales	24%
TOTAL CASH EXPENSES	\$135,712	Feed & crop exp./cwt. milk	\$4.33
Machinery depreciation	14,043	Fertilizer & lime/crop acre	\$33
Building depreciation	6,190	Machinery cost per cow	\$481
Unpaid labor	1,000	Average price per cwt. milk	\$12.88
Int. on farm equity @ 9%	30,602		
Expansion livestock	2,115		
TOTAL FARM EXPENSES	\$189,662		

FARM BUSINESS SUMMARY
Average of 28 New York Dairy Farms, 1980
75-99 Acres of Corn for Grain

<u>CAPITAL INVESTMENT</u>		<u>RECEIPTS</u>	
	<u>End of Year</u>		
Livestock	\$151,616	Milk sales	\$184,140
Feed & supplies	51,500	Crop sales	2,349
Machinery & equipment	106,215	Dairy cattle sold	16,353
Land & buildings	264,549	Other livestock sales	3,074
TOTAL INVESTMENT	\$573,880	Gas tax refund	130
		Government payments	300
		Custom machine work	421
		Miscellaneous	1,727
<u>EXPENSES</u>		TOTAL CASH RECEIPTS	\$208,494
Labor		Increase in livestock	5,225
Hired	\$ 20,048	Increase in feed & supplies	7,987
Feed		TOTAL FARM RECEIPTS	\$221,706
Dairy concentrate	43,823		
Hay & other	1,806		
Machinery		<u>FINANCIAL SUMMARY</u>	
Machine hire	1,152	Total Cash Receipts	\$208,494
Machinery repair	10,095	Total Cash Expenses	164,900
Auto expense	504	NET FARM CASH FLOW	\$ 43,594
Gas & oil	8,587	Total Farm Receipts	\$221,706
Livestock		Total Farm Expenses	223,924
Replacement livestock	2,785	LABOR & MANAGEMENT INCOME	
Breeding fees	3,099	PER FARM	\$ -2,220
Veterinary, medicine	3,573	Number of operators	1.2
Milk marketing	5,998	LABOR & MANAGEMENT INCOME	
Other livestock expense	7,375	PER OPERATOR	\$ -1,866
Crops		<u>BUSINESS FACTORS</u>	
Fertilizer & lime	11,265	Worker equivalent	3.3
Seeds & plants	3,106	Number of cows	99
Spray & other	2,583	Number of heifers	77
Real Estate		Acres of hay crops	185
Land, building, fence repair	1,931	Acres of corn silage	66
Taxes	4,368	Total acres of crops	364
Insurance	3,426	Lbs. of milk sold	1,407,300
Rent	3,558	Lbs. of milk sold per cow	14,200
Other		Tons hay crops per acre	2.5
Telephone (farm share)	625	Tons corn silage per acre	14.2
Electricity (farm share)	3,724	Cows per worker	30
Interest paid	18,585	Lbs. of milk sold/worker	422,600
Miscellaneous	2,884	% feed is of milk sales	34%
TOTAL CASH EXPENSES	\$164,900	Feed & crop exp./cwt. milk	\$4.32
Machinery depreciation	14,494	Fertilizer & lime/crop acre	\$31
Building depreciation	7,351	Machinery cost per cow	\$443
Unpaid labor	1,500	Average price per cwt. milk	\$13.08
Int. on farm equity @ 9%	34,439		
Expansion livestock	1,252		
TOTAL FARM EXPENSES	\$223,716		

FARM BUSINESS SUMMARY
Average of 36 New York Dairy Farms, 1980
100-149 Acres of Corn for Grain

<u>CAPITAL INVESTMENT</u>		<u>RECEIPTS</u>	
	End of Year		
Livestock	\$202,508	Milk sales	243,181
Feed & supplies	62,922	Crop sales	5,116
Machinery & equipment	126,871	Dairy cattle sold	23,278
Land & buildings	341,271	Other livestock sales	5,216
TOTAL INVESTMENT	\$733,572	Gas tax refund	221
		Government payments	1,154
		Custom machine work	559
		Miscellaneous	2,757
<u>EXPENSES</u>		TOTAL CASH RECEIPTS	\$281,482
Labor		Increase in livestock	9,934
Hired	\$ 29,090	Increase in feed & supplies	10,817
Feed		TOTAL FARM RECEIPTS	\$302,233
Dairy concentrate	52,918		
Hay & other	2,269		
Machinery			
Machine hire	3,302	<u>FINANCIAL SUMMARY</u>	
Machinery repair	15,468	Total Cash Receipts	\$281,482
Auto expense	568	Total Cash Expenses	219,871
Gas & oil	11,411	NET FARM CASH FLOW	\$ 61,611
Livestock		Total Farm Receipts	\$302,233
Replacement livestock	4,582	Total Farm Expenses	295,466
Breeding fees	3,134		
Veterinary, medicine	5,209	LABOR & MANAGEMENT INCOME	
Milk marketing	5,908	PER FARM	\$ 6,767
Other livestock expense	11,745	Number of operators	1.5
Crops		LABOR & MANAGEMENT INCOME	
Fertilizer & lime	15,479	PER OPERATOR	\$ 4,572
Seeds & plants	4,630		
Spray & other	3,524	<u>BUSINESS FACTORS</u>	
Real Estate		Worker equivalent	4.0
Land, building, fence repair	4,624	Number of cows	127
Taxes	6,655	Number of heifers	100
Insurance	4,606	Acres of hay crops	201
Rent	4,332	Acres of corn silage	82
Other		Total acres of crops	438
Telephone (farm share)	733	Lbs. of milk sold	1,896,400
Electricity (farm share)	4,316	Lbs. of milk sold per cow	14,900
Interest paid	22,024	Tons hay crops per acre	3.0
Miscellaneous	3,344	Tons corn silage per acre	16.5
TOTAL CASH EXPENSES	\$219,871	Cows per worker	32
Machinery depreciation	17,341	Lbs. of milk sold/worker	474,100
Building depreciation	7,388	% feed is of milk sales	22%
Unpaid labor	1,500	Feed & crop exp./cwt. milk	\$4.04
Int. on farm equity @ 9%	45,189	Fertilizer & lime/crop acr	\$35
Expansion livestock	4,177	Machinery cost per cow	\$463
TOTAL FARM EXPENSES	\$295,466	Average price per cwt. milk	\$12.82

FARM BUSINESS SUMMARY
Average of 25 New York Dairy Farms, 1980
150 or More Acres of Corn for Grain

<u>CAPITAL INVESTMENT</u>		<u>RECEIPTS</u>	
	<u>End of Year</u>		
Livestock	\$ 282,059	Milk sales	\$336,511
Feed & supplies	99,929	Crop sales	14,117
Machinery & equipment	174,565	Dairy cattle sold	24,041
Land & buildings	487,377	Other livestock sales	6,367
		Gas tax refund	578
TOTAL INVESTMENT	\$1,043,930	Government payments	452
		Custom machine work	443
		Miscellaneous	5,540
<u>EXPENSES</u>		TOTAL CASH RECEIPTS	\$388,049
Labor		Increase in livestock	20,050
Hired	\$ 46,271	Increase in feed & supplies	17,494
Feed		TOTAL FARM RECEIPTS	\$425,593
Dairy concentrate	70,479		
Hay & other	3,310		
Machinery		<u>FINANCIAL SUMMARY</u>	
Machine hire	2,921	Total Cash Receipts	\$388,049
Machinery repair	18,407	Total Cash Expenses	297,948
Auto expense	489		
Gas & oil	16,275	NET FARM CASH FLOW	\$ 90,101
Livestock		Total Farm Receipts	\$425,593
Replacement livestock	3,255	Total Farm Expenses	405,076
Breeding fees	4,167		
Veterinary, medicine	6,800	LABOR & MANAGEMENT INCOME	
Milk marketing	8,421	PER FARM	\$ 20,517
Other livestock expense	11,674	Number of operators	1.5
Crops		LABOR & MANAGEMENT INCOME	
Fertilizer & lime	24,552	PER OPERATOR	\$ 13,498
Seeds & plants	7,073		
Spray & other	6,255	<u>BUSINESS FACTORS</u>	
Real Estate		Worker equivalent	5.1
Land, building, fence repair	5,008	Number of cows	177
Taxes	7,362	Number of heifers	142
Insurance	5,423	Acres of hay crops	195
Rent	7,288	Acres of corn silage	129
Other		Total acres of crops	600
Telephone (farm share)	895	Lbs. of milk sold	2,659,400
Electricity (farm share)	4,839	Lbs. of milk sold per cow	15,000
Interest paid	32,687	Tons hay crops per acre	3.2
Miscellaneous	4,097	Tons corn silage per acre	15.7
TOTAL CASH EXPENSES	\$297,948	Cows per worker	35
Machinery depreciation	29,476	Lbs. of milk sold/worker	523,500
Building depreciation	12,597	% feed is of milk sales	21%
Unpaid labor	500	Feed & crop exp./cwt. milk	\$4.07
Int. on farm equity @ 9%	63,514	Fertilizer & lime/crop acre	\$41
Expansion livestock	1,041	Machinery cost per cow	\$465
TOTAL FARM EXPENSES	\$405,076	Average price per cwt. milk	\$12.65